Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC

In the Matter of	)	
	)	
The Development of Operational,	)	
Technical and Spectrum Requirements	)	
For Meeting Federal, State, and Local	)	WT Docket No. 96-86
Public Safety Agency Communication	)	
Requirements Through the Year 2010	)	
	)	
Establishment of Rules and Requirements	)	
For Priority Access Service	)	

To the Commission:

COMMENTS OF THE STATE OF CALIFORNIA

State of California
Department of General Services-Telecommunications Division
601 Sequoia Pacific Boulevard
Sacramento, California 95814-0282
(916) 657-9367

December 22, 1997

EXECUTIVE SUMMARY

The State of California commends the Commission on its desire to develop a vision for the future of public safety communications into the 21st century, however the State does not concur with the Commission's apparent view that the 746-806 MHz band is capable of resolving all of the ills identified in the Public Safety Wireless Advisory Committee (PSWAC) Report. The proposed 24 MHz of spectrum will go a long way toward resolving many of the short-term needs for additional capability but it cannot provide the breadth of services for which PSWAC identified a need for 97.5 MHz of spectrum. The State recommends the Commission focus use of this spectrum on those services which are in immediate demand and relegate other undefined and futuristic services to the 73.5 MHz of spectrum yet to be identified. Toward this end, the State recommends the Commission channelize this spectrum for 6.25 kHz wide voice and data (19.2 kbps and below) services. Additionally, since 6.25 kHz wide radio equipment is not likely to be available for several years, the State recommends the Commission permit aggregating two adjacent channels into a single 12.5 kHz wide channel for which radio equipment is likely to be available in 1-2 years.

The State does not support the Commission proposal to set aside a substantial portion of the new spectrum for interoperability purposes. The reality is, public safety radio systems already are significantly balkanized with different agencies operating in the VHF Lowband, VHF Highband, UHF band including TV14-20 shared channels, and the 800 MHz band. These agencies cannot afford to buy additional radios in the 746-806 MHz band for the sole purpose of promoting interoperability. What is needed is a

mode of operation which allows each agency to take the equipment they normally use for "day-to-day" intra-agency communications and use that same equipment for "interoperability" communications. This mode of operation is best provided by a system of "gateways" between interoperability channels in each of the frequency bands. Therefore, the State recommends the Commission establish a limited number of channels for interoperability in the new band and mirror those channels in the other public safety frequency bands.

The State supports the concept of regional planning for establishing definitive rules for the utilization of the new spectrum. In general, the regional planning process used for assignment of the "National Public Safety Plan Advisory Committee" (NPSPAC) channels worked well and, with minor modifications, could work well for the allocation of this spectrum.

The State supports the establishment of standards for operation on the interoperability channels. The State, however, does not believe a single standard should apply to general usage of the 746-806 MHz band. While the State believes standards promote competition in the marketplace, it believes individual users should be allowed to select a technology which they believe will best serve their "day-to-day" operational needs. Nonetheless, every radio operating in this band should be capable of operating on the interoperability channels in the "standardized" mode. Therefore, the State recommends the Commission establish rules to define a "standardized" mode of operation and require, through the type-acceptance process, that every radio be capable of operating in that "standardized" mode. The State further recommends

adoption of the Project 25 suite of documents (TIA 102 Series) as the definition for the "standardized" mode.

The State believes the definition for public safety contained in this proceeding is unreasonably restrictive and recommends the Commission adopt the definition developed by the PSWAC. Federal users should not be excluded from use of the interoperability spectrum as would result from the proposed definition and should be allowed to participate as full partners in shared general usage radio systems which might be developed to provide service in some region of the country. Furthermore, the proposed definition excludes users who do not carry "guns and hoses" from use of the spectrum. Not only would the exclusion of these "non-guns and hoses" agencies significantly hinder the aid they provide during a disaster or other event, but also would impact the economic viability for any communications system constructed in this band. The way of the future is in shared radio systems which provide service to all types of agencies within a governmental entity---police, fire, and EMS as well as public works, social services, and administration. In spite of the definition placed in the Communications Act by Congress, the Commission should broaden the definition to include all governmental entities.

TABLE OF CONTENTS

I. INTRODUCTION

1. The State of California (State), as represented by the California Department of General Services-Telecommunications Division, herein submits comments on the above captioned proceeding.

2. Over 100 state agencies utilize public safety radio systems to enhance their ability to serve the California public. These agencies include some of the largest such agencies in the country: the California Highway Patrol, the Department of Forestry and Fire Protection, the Department of Corrections, and the Department of Transportation. They also include numerous small agencies such as the Air Resources Board and the Horse Racing Board. In total, these state agencies operate in excess of 43,000 subscriber units in every portion of the state from the most populous areas of Los Angeles and San Francisco to the most rural areas of Modoc and Imperial counties.

3. In 1994, the State embarked on a project to develop a strategic plan for meeting its public safety communications needs through the year 2010. That effort resulted in the January 1997 publication of a document entitled *Partnering for the Future: A Strategic Plan for California's Public Safety Radio Communications*. The comments contained herein embody the conclusions contained in that plan.

4. To aid in the association of these comments to questions asked in the Notice of Proposed Rulemaking (hereinafter referred as "docket"), the State has adopted the same section titles as used in the docket.

II. PUBLIC SAFETY COMMUNICATIONS

A. Overview: Goals for Public Safety Communications

1. Vision for Use of New Spectrum

5. The State commends the Commission on its desire to develop a vision for the future of public safety communications into the 21st century, however, the State does not concur with the Commission's apparent view that the 746-806 MHz band is capable of resolving all of the ills identified in the Public Safety Wireless Advisory Committee (PSWAC) Report. The proposed 24 MHz of spectrum is not adequate to provide the breadth of services for which PSWAC identified a need for 97.5 MHz of spectrum. In addition, the realities of using this spectrum is likely to exacerbate, not improve, the current interoperability problems by adding yet another frequency band which must be considered when attempting to communicate with multiple public safety agencies. The State recommends the Commission focus use of this spectrum on those services which are in immediate demand and relegate other undefined and futuristic services to the 73.5 MHz of spectrum yet to be identified. Specifically, the PSWAC identified an immediate need for 25 MHz of spectrum to satisfy current demand for expanded voice and data (19.2 kbps and below) services. These demands should be met before any attempt is made to satisfy requests for the high speed, imaging, and video applications which PSWAC had targeted as being met by a future allocation of 70 MHz. This allocation also should not be expected to fully meet the PSWAC request for 2.5 MHz of spectrum for interoperability. The PSWAC Report clearly identified that need as being below 512 MHz because that is where the bulk of existing public safety radio systems

currently operate. While "mutual aid" and "task force" type interoperability may realize some benefit from an allocation in the 746-806 MHz band, the "day-to-day" interoperability requirements identified in the PSWAC Report will not be satisfied.

6. The State takes exception to Commission comments that "...public safety communications continue to be plagued by inefficient spectrum use, by the absence of a competitive market for public safety communications equipment and services that meet public safety agency needs, and by difficulties in building a structure for interoperable communications among public safety agencies."[1] Over the past fifty years, public safety users have implemented at least two "narrowbanding" initiatives, moving from 120 kHz wide channels to 60 kHz wide channels, then to 30 kHz wide channels. As a result of the "refarming docket"[2], public safety is now embarked on another initiative to narrowband its radios by moving to 12.5 kHz wide channels and, eventually, to 6.25 kHz channels. Furthermore, in two bands (150 MHz[3] and NPSPAC[4]) spectral efficiency is further enhanced by using "offset" channels[5] with

---

[1] Docket at 6.

[2] PR Docket 92-235 (FCC 92-469) Notice or Proposed Rule Making and subsequent Report and Order.

[3] 150-174 MHz band.

[4] 821-824 MHz paired with 866-869 MHz.

[5] Channels which are offset from the primary channel by one-half the channel bandwidth. Equipment operating on the "main" channel continues to occupy the full bandwidth of the channel while equipment operating on the "offset" channel occupies an equivalent amount of bandwidth which is spread across the "top half" of one "main" channel and the "lower half" of the next adjacent "main" channel. Thus, the two channels, the "main" and the "offset", would cause significant interference to each other if they were used in the same geographic area. A "main-to-offset" frequency reuse pattern results in closer station spacings than would be possible under a co-channel reuse pattern. Thus, spectral efficiency is improved by allowing a tighter reuse pattern.

geographic separation. Few other radio services can claim the same efforts to improve spectrum efficiency.

7. The market for public safety communications equipment and services is highly competitive, with the possible exception of 800 MHz trunked radio systems. The failure of the Commission or any other body to establish definitive national standards for trunked radio systems is the primary reason the market for those systems is not as competitive as many agencies would desire.[6]

8. The difficulties in building a structure for interoperable communications is not for lack of desire but rather from the technical problems created by the spectrum allocation processes of past Commissions. Most significantly, the allocation of relatively small segments of spectrum in several different frequency bands has made it impossible for public safety agencies to obtain a single radio which is capable of "talking" with all of the agencies with whom they may need to interoperate. Additionally, the Commission has taken very little action to set aside specific channels for interoperability purposes. Thus, simply identifying a channel to which all participants have access is a major undertaking, one that often is found to be impossible to resolve.

9. Any vision of the future must be tempered by the reality of what can be accomplished. For instance, the proposed allocation of 24 MHz of spectrum should be adequate to provide all of the voice and low-speed data requirements for public safety

---

[6] The lack of standards has resulted in the three major manufacturers supporting the U.S. public safety market developing and selling trunked radio systems which are mutually incompatible in the details of the technologies utilized.

agencies across the country.[7] In transitioning their radio systems to this new band, public safety agencies could accomplish the Commission's goal of increasing spectral efficiency by moving from older "inefficient" 25 kHz channelized systems to newer "efficient" 12.5 kHz or 6.25 kHz channelized systems. Furthermore, the transition would improve interoperability by eliminating the greatest technical hurdle to interoperability today, the many different frequency bands across which public safety radio systems currently operate. Unfortunately, the "real world" issue of funding such a conversion makes this option difficult to accomplish. Thus, compromises will have to be made in crafting our vision of the future--- optimal solutions which are little more than "pie-in-the-sky" ideas will have to take second place to practical solutions.

2. Public Safety Communications Goals

10. The Commission is correct in its assessment that achieving seamless nationwide communications interoperability among Federal, State, and local public safety agencies is a desirable goal. But achieving this goal is fraught with obstacles, at least one of which may be insurmountable---funding. The best technical solution to providing this seamless interoperability is to move all public safety systems into a common radio band. This solution, however, would require replacing every public safety radio system, both Federal and non-Federal, with a new radio system operating in the 746-806 MHz

[7] The proposed allocation of 24 MHz compares to an existing allocation of approximately 23.5 MHz in the other current frequency bands (there is additional spectrum allocated in the major metropolitan areas). Furthermore, the proposed allocation could be channelized into 12.5 kHz or even 6.25 kHz channels which would double or quadruple the number of available channels over the existing 25 kHz channelization in the other bands.

band. The cost of such a replacement would run into the tens, if not hundreds, of billions of dollars[8] which in today's environment of reduced public spending, is a non-starter. The alternative of establishing a single interoperability band is probably also a non-starter. This alternative would require building and maintaining a nationwide system for the sole purpose of interoperability. The cost of such a system would again be in the tens of billions of dollars, all for a system which may lie largely unused. Furthermore, such a system would require individual users to carry two radios (one for their primary communications and one on the interoperability system). Even if the cost for these additional radios was negligible, which it isn't, the "price" to be paid in space taken up inside a vehicle or on an officer's belt make it highly unlikely that agencies will equip their personnel to operate on an "interoperability" band.

11. Gateways are probably the best alternative for providing interoperability, however, this option requires that an "entry" to the gateway be provided in each band. That is one of the reasons PSWAC recommended that the bulk of the 2.5 MHz of spectrum for interoperability come from **below 512 MHz.** Spectrum must be found which is compatible with the existing radios used by public safety agencies or else many of those agencies will find interoperability to be "too expensive". To be effective, gateways will still require the construction of an interoperability infrastructure which can then be accessed by the user agencies. Construction of such an infrastructure can be accomplished incrementally as agencies identify specific needs and find appropriate

[8] The State estimates the cost of constructing and maintaining a 746-806 MHz system in California for use by state agencies (i.e. not including county, city, or other local agencies within California) as being $1-3 Billion funded over a 15-year period.

funding. The overall cost of a gateway-based system is minimized by using a single subscriber unit for both "routine" communications and for "interoperability" communications.

12. The Commission questions whether 2.5 MHz of spectrum is adequate for interoperability purposes[9]. PSWAC arrived at this number based upon an analysis of the communications needs in responding to a large, disaster-type event utilizing the Incident Command System (ICS) which is widely accepted across the U.S. Thus, the amount of spectrum is based upon satisfying identified operational needs and not upon setting aside some arbitrary percentage of the available spectrum. For this reason, the State supports 2.5 MHz, spread across the 150 MHz, 450 MHz, 800 MHz and 746-806 MHz bands, as being the appropriate amount of spectrum for interoperability purposes.

13. The State has been an active participant in the PSWAC process and in the Project 25 Advanced Technologies Standards process[10]. As a result of this participation, it is convinced that setting new technical standards is the cornerstone for achieving interoperability in a new "spectrally efficient" world. For over fifty years, public safety communications system have been designed utilizing analog FM technology. Even newer 800 MHz trunked radio systems use analog FM technology with certain non-standard enhancements which control the trunking function. As a result, users

---

[9] Docket at 15.

[10] Project 25 is a joint effort of the Association of Public Safety Communications Officials-International (APCO), the National Association of State Telecommunications Directors (NASTD), and several Federal agencies to establish the user-defined needs for a new generation of land mobile radio and, in conjunction with the Telecommunications Industry Association (TIA) to develop a suite of standards for the design and operation of such radio.

have long had the ability to purchase radios from multiple sources for operation within their own radio system and have had the ability to communicate with neighboring systems provided there was some compatibility in the frequency bands used by the two systems. As the push came to move toward narrower and narrower bandwidths, it became obvious that the analog FM technology was no longer going to be able to satisfy public safety's communications needs, a move toward a fully digital technology was required. However, the State recognized that such a move meant the "old standard" (analog FM) would no longer be valid. Furthermore, having experienced the chaos resulting from the lack of technical standards for 800 MHz trunking, the State believed new technical standards were needed to ensure that public safety agencies could acquire equipment from multiple sources for operation within a single radio system and to enable units from different radio systems to intercommunicate (i.e. interoperability). This belief led to the State's involvement in the Project 25 process.

14. The State fully supports the concept of regional planning committees for establishing definitive plans for the utilization of spectrum. The State has been an active participant in the regional planning committees established under the NPSPAC plan and has found them to be an effective method of making optimal use of the radio spectrum. These committees are able to bring to the table a level of knowledge about local terrain and propagation characteristics which simply cannot be found in any other venue. Furthermore, their knowledge of local operational issues give them the ability to analyze a proponent's need for additional spectrum. Thus, they are better able to evaluate requests for new spectrum and the proposed design of systems using that

spectrum than is any frequency coordinator or government agency which is not based in the immediate area.

15. The State does not concur with the Commission's analysis of the competitiveness of the public safety market.[11] Today's public safety market is very competitive. The plain vanilla, analog FM systems used by most public safety agencies across the country are available from all three of the major U.S. manufacturers[12], as well as from a number of smaller U.S. manufacturers[13] and a number of off-shore manufacturers[14]. It is only when an agency implements a special feature such as trunking or encryption that the competitiveness of making follow-on purchases comes into question and agencies find themselves locked into making a purchase from a single supplier. What has created this non-competitive environment---the lack of technical standards defining how trunking and encryption should function. Therefore, the State firmly believes that a competitive marketplace is enhanced by the establishment of standards which establish the parameters to which all vendors build their equipment and which discourage manufacturers from building proprietary equipment. Admittedly, standards discourage innovation and may slow the development of new technologies, but this must be balanced against public safety's need for reliable platforms which have a reasonable life-cycle.

---

[11] Docket at 23-25.

[12] Motorola, Ericsson, and E.F. Johnson (now Transcrypt)

[13] BK Radio, Relm, Midland, and Maxon, for example

[14] Yaesu and Kenwood, for example

B. Interoperability Service Rules

16. The State does not believe the interoperability situation is as bleak as portrayed in this rulemaking[15]. To the contrary, on a local level many counties within California have bonded together with the cities within the county to create shared radio systems or, at least, have colluded to operate in a common radio band and to carry certain of each other's frequencies in their radios. Furthermore, many cities and counties have developed radio systems which utilize a common radio band for the different disciplines of police, fire , EMS, and public works. Thus, there is a great deal of interoperability capability already in place, especially that associated with "day-to-day" operations. The "problem" does not manifest itself until either an event occurs which requires assistance from a neighboring county which may have established itself in a different frequency band[16] or an event occurs which involves state or federal agencies. Due to the wide-area nature of state and federal communications systems, it is more likely that these agencies will find they are not compatible with the "local" radio systems.

17. The State concurs with the definitions for interoperability detailed in paragraph 29 of the docket and recommends the Commission formally adopt these definitions. It further recommends the Commission adopt the definition for "mission critical" communications detailed in paragraph 30 of the docket.

---

[15] Docket at 26 et seq.

[16] Within California, some counties and the cities within them have congregated in the VHF Highband (150-174 MHz) spectrum while other counties/cities have congregated in the UHF (450-470 MHz) and still other counties/cities have congregated in the 800 MHz spectrum. State and federal agencies may be compatible with some counties/cities depending upon specific frequencies used, but are not likely to be compatible with all of the counties/cities.

1. Interoperability Spectrum

18. The State does not concur with the Commission's proposal to set aside a "significant amount" of spectrum in the 746-806 MHz band as an interoperability band. As previously stated, most existing public safety radio systems already exist in other bands and agencies operating those systems have no need or desire to implement radio systems in the new band. These agencies also are not likely to have any desire to expend the funds necessary to construct the infrastructure necessary for operation of an "interoperability system" in the 746-806 MHz band. Furthermore, these agencies are unlikely to equip their field personnel with radios capable of operating in this band for the sole purpose of having an interoperability capability which is of little day-to-day value. Thus, any channels set aside as an "interoperability band" are likely to lie fallow even in the event of major disaster because no public safety agency will be equipped to use the band. The State recommends that a limited number of channels be set aside for interoperability amongst users of this band and to serve as an access point for a gateway to the other public safety frequency bands. The State then recommends that additional channels be established in the other frequency bands to enhance interoperability for agencies operating in those bands. While it is true that those bands are largely occupied with existing systems, the Commission recently took action to "re-farm" those bands. This has "created" additional channels which have not yet been assigned to any user. Some of those channels could be designated as "interoperability" channels. The State recommends that 20 channel-pairs be thus designated in each band with an additional 20 simplex channels designated for tactical operations. If a

similar quantity of channels were designated in the 746-806 MHz band, then there would be 65 channel-pairs[17] plus 60 simplex channels As the need arose, channels in different frequency bands could be cross-connected through a gateway to permit interoperability amongst different users. While the State realizes that this is not the optimal solution to the interoperability problem, it is the most practical solution considering the significant investment in existing systems and the reluctance of most public safety agencies to change without some compelling incentive.

19. The State sees the greatest demand for voice-type interoperability with a small demand for data-type (19.2 kbps or less) interoperability. Interoperability situations often are fluid and dynamic involving personnel operating in a high-stress environment. In these situations, the spoken word remains the most effective and quickest method of exchanging information. Voice communications allow the individual to listen and talk while maintaining a visual awareness of the scene and what is happening. They also allow the individual to be doing something with his/her hands or otherwise be physically involved in the incident. These activities are not possible with other forms of communications. The demand for data-type interoperability is limited to perhaps one channel which would allow an individual to supply information regarding unit capability as he/she nears the scene of an incident and/or to receive a standardized information packet regarding the incident including information on where to report. The usefulness of data-type communications in an interoperability situation is further diminished by the

[17] 20 channels in each the 150 MHz band, the UHF band, and the 746-806 MHz band plus the 5 channels currently designated in the NPSPAC portion of the 800 MHz band.

complete lack of standards in the formatting of data messages and how those messages interact with the end-user equipment at the central office and at the subscriber unit. Most of the data communications discussed in the docket[18] are of an intra-agency type which are most appropriately carried on the normal communications system of the agency and not of an inter-agency type appropriate to interoperability channels. The State sees no demand for image/high speed data-type or video-type interoperability. The examples of image/high speed data and video applications discussed in the docket[19]are more appropriately handled through hard-wire or internet-type interconnections between agencies with the links to field personnel being provided through their own regular communications systems.

20. The only way that communication can occur over voice or other interoperability channels is for there to be standards which clearly define the technical parameters by which the communication is transmitted and the operational parameters by which it is used. If one agency is using analog FM while another agency is using some form of digitized voice modulation, no communication occurs. If two agencies are using different types of digitized voice or data systems, no communication occurs. If the format of data messages has not been agreed upon, no communication occurs. There have even been numerous incidents in which no communication occurred because the involved agencies had named their common channels differently and, therefore, did not know that they had a common mode of communication available. All of this leads to the

---

[18] Docket at 47-48

[19] Docket at 49-50.

indisputable need for standards, preferably a single standard, for interoperability purposes. Most public safety communications equipment in service today operates in the analog FM mode on 25 kHz channels. This would seem to argue for that to be the standard. The State believes, however, that setting such a standard would be a serious mistake. The Commission already has set in motion a migration of public safety systems to 12.5 kHz channels and eventually to 6.25 kHz operation. It makes little sense to allow operations in the 746-806 MHz band to be any less spectrally efficient than is already proposed for the other bands. Thus, channel bandwidths of 12.5 kHz with an eventual migration to 6.25 kHz bandwidths should be required in this band. Such a requirement precludes the use of analog technologies because they are not capable of supporting voice communications in a 6.25 kHz bandwidth. Thus, a single digital standard should be adopted for use in this band.

21. There are no "legacy" systems operating in the 746-806 MHz band which must be accommodated when selecting a standard, virtually any standard should be acceptable. Having said this, the State looks at the 8-year effort made by the people working on Project 25 and, in spite of the reports of "controversy" regarding the standards thus developed, notes that the standards were developed in an open forum and are based on the stated needs of the user community. The Project 25 standards have been accepted by a number of manufacturers and there is tremendous likelihood that equipment, both infrastructure and subscriber units, will be available from multiple sources. Since there is nothing to suggest that an alternative standards setting process can be completed in a reasonable period of time and since there is nothing to suggest

that such a process would result in any other solution and since the Project 25 Standard fits the needs of state agencies, the State recommends the Commission adopt those standards as the required mode of operation on the voice and data interoperability channels in the 746-806MHz spectrum.

22. The State recommends that interoperability channels be spaced at 6.25 kHz centers with an initial allowance for aggregating two adjacent channels into a single 12.5 kHz wide channel to accommodate operations pending availability of equipment capable of operating within a 6.25 kHz channel. The State further recommends that the interoperability channels not be grouped together in a single sub-band, but rather that they be interspersed amongst the general assignment channels with 200 kHz separation between channels (or groups of channels) to allow efficient operation of antenna combining systems. This is needed to enhance the usability of these channels in a single area and, more importantly, at a single radio facility.

23. While the State would strongly support the adoption of receiver standards to enhance operation of analog FM systems, it is not convinced that such standards are needed for a purely digital system.

24. The State recommends that, like the NPSPAC band, the Commission mandate that all radios operating in the 746-806 MHz band be capable of operating on whatever interoperability channels might be designated. However, the State does not believe that every public safety radio should be equipped[20] to operate on those channels. The

---

[20] "Equipping" the radio means to actually utilize one or more of the available channel programming positions for an interoperability channel.

decision as to which, if any, of the interoperability channels to which a specific user has access should remain the prerogative of the agency's management and not be the subject of some federal mandate. Individual agencies may or may not have a need to operate on various "interoperability" channels based upon local usage patterns. To unnecessarily "clog up" a radio with unneeded channels is unreasonable.

2. Eligibility, Use and Licensing

25. The State believes the definition for public safety contained in the docket[21] is unreasonably restrictive and recommends the Commission adopt the definition developed by PSWAC[22]. The PSWAC definition contains significant differences which are critical to effective interoperability operations. First, it includes Federal agencies as eligible users. To exclude Federal users from access to the interoperability channels will serve only to perpetuate the problems experienced in past events including major wildland fires, natural disasters, and events such as the Oklahoma City bombing. Second, it includes public safety users who do not carry "guns and hoses" but who are no less critical to responding to many "interoperability" events. Public works departments, highways departments, transportation agencies, non-emergency health care agencies, and many others play very significant roles during a disaster or major

---

[21] Docket at 74.

[22] PSWAC defined "public safety" as "(T)he public's right, exercised through Federal, State or Local government as prescribed by law, to protect and preserve life, property, and natural resources and to serve the public welfare."

event and they need access to the interoperability channels to coordinate their activities not only amongst themselves but also with the traditional "guns and hoses" agencies.

26. California has taken a unique approach toward defining eligibility to use existing "interoperability" systems. Eligible agencies include virtually any governmental entity having an identifiable need to operate on a particular "mutual aid" system and, in some cases, includes non-governmental utilities and industrial users. However, only the State is eligible to hold an FCC station license on the interoperability channels. Thus, any agency desiring to operate on one of the existing systems submits a request to the State Office of Emergency Services. OES validates the agency's need to operate on the specific system requested and, if necessary, imposes appropriate limitations on such usage. A FCC station license is then obtained in the name of the State. As a result, all agencies, both governmental and non-governmental are "guests" of the state and their use of the system is subject to the conditions imposed by the "licensee". In actuality, the operating rules for each system and any "sanctions" which might be imposed against an errant user are the responsibility of an advisory committee established by the state and consisting of appropriate representatives from the user community. This process has worked well within California and has broad support from the affected public safety agencies. We suggest a similar arrangement be established nationwide.

27. The State supports the concept of regional planning rather than national planning. "Interoperability" events, in particular, require responders to "go with the flow". They may start out operating within a pre-determined framework, but need the

flexibility to adapt their operations to the particular circumstances of the event. Regional plans which have been created by the local community are more likely to address realistic scenarios for the local area[23] and are more likely to include mechanisms for adapting the plan to specific events. A national plan would have to be much more general in nature and may be inflexible in its ability to adapt quickly to a specific event[24]. In many cases within California, the general responsibility for responding to disasters and other major events lies with the counties and local agencies. When and if the state becomes involved, it is to support the local agency, not take control. The same is true for federal agencies. Thus, it is incumbent on the state and federal agencies to integrate themselves into the local situation while causing minimal disruption to operations. In other situations, the state is the primary responding agency[25] and all assisting agencies need to integrate themselves into the state operation. Other than designating a core group of channels for use as "interoperability channels" and providing a naming convention for those channels[26], the State recommends further planning be the purview of regional planning committees. In

---

[23] For instance, a rural area is more likely to have a need for an interoperability plan which deals with wildland fire scenarios than one which deals with civil disturbance scenarios.

[24] For instance, who has authority to "modify" the plan in response to an emergent situation. Does that authority lie with one person in a large event or can multiple individuals make conflicting "modifications".

[25] Such as an event in a state park, along a major highway, or the "wildlands".

[26] As previously noted, there are several documented circumstances of agencies not realizing they had one or more common channels for communication at an event due to differences in how each named the channel. To resolve this problem for the 800 MHz interoperability channels, the NPSPAC committee recommended naming the first channel "International Calling Channel" or "I-Call" and naming the other four interoperability channels "International Tactical Channel 1-4" or "I-TAC 1-4"

performing this function, the regional planning committees should have maximum flexibility to craft a plan which is appropriate to the needs of the region.

3. Trunking on Interoperability Spectrum

28. The State recommends against permitting trunking on interoperability spectrum. While the establishment of standards might resolve the current technical problems associated with proprietary differences in how trunking systems operate, there will remain very serious operational issues which cannot be resolved. Foremost amongst these is the need to create unique unit ID's for every public safety subscriber unit in the country, to register those ID's, and to enter those ID's into the trunking system controller so that it recognizes those ID's as valid users. Having done all of this, one would still have to assign each of those units to an appropriate "talk-group" and may have to reassign the "talk-group" designation to conform to the unique operational requirements of the event. The potential benefit from using trunking does not justify the tremendous effort required to enable it on the interoperability spectrum.

29. Public safety users who have implemented trunking systems have discovered a very interesting phenomena---trunking systems more readily bog-down under heavy load conditions than did the old non-trunked radio systems. An analysis of what was happening revealed that users on a trunked radio system no longer self-regulated their use of the radio system because they did not know that it was overloaded. On a conventional system, two user groups might share a common channel. Each would listen to what was happening and, if they heard that the other group had some big

event going on, they would limit their communications to essential items. If the channel was not overly busy, then lower priority messages would be transmitted. In this way, the two (or more) user groups regulated their own use of the radio system. When trunking was implemented, those two user groups were now identified as separate user groups on the system. They no longer listened to what the other user group was doing, they had no idea who else was using the radio system. As far as they knew, they were the only people using the radio system, so there was no need to ever limit themselves to high priority messages. In a large-scale emergency, it is important that every user realize there are other user groups out there and how their own use of the radio system is impacting the overall operation. Trunking is not necessarily more efficient under near fully loaded circumstances.

4. Technical Standards for Interoperability Spectrum

30. As previously stated, the State supports the adoption of standards for interoperability. There are no "legacy" systems operating in the 746-806 MHz which would be impacted by the adoption of any standard, so there is no need to worry about "backward compatibility". The State strongly recommends adoption of the Project 25 suite of standards. While public safety organizations had a significant input to the development of these standards through the development of the user needs specifications, the technical standards were developed by the equipment manufacturers through an appropriate standards association, as desired by the Commission, specifically the Mobile and Personal Communications Division of the Telecommunications Industry Association (TIA). The process went as follows: the